



## AMS-02 Weekly Activity Report, August 19, 2005

### Upcoming Events:

- USS-02 Extruded Beams Delivery – August 31 and September 7, 2005
- Magnet Meeting – September 12-13, 2005 – Culham, England
- Acoustic and Thermal Vacuum Test Meeting @ ESTEC – September 14, 2005 – Noordwijk, Netherlands
- Thermal Working Group (TWG) TTCS Meetings – September 15-16, 2005 – Amsterdam (or Emmeloord), Netherlands
- AMS-02 Technical Electronics Meeting (TEM) @ CSIST – September 26-30, 2005 – Taiwan
- STA Vacuum Case Delivery (on dock at STADCO) – September 29, 2005 (subject to weld inspection and review)
- AMS-02 Phase II Safety Data Package to the Collaboration for review – October 10, 2005
- AMS-02 General Technical Interchange Meeting (TIM) @ CERN – October 24-28, 2005 – Geneva
- ACOP Critical Design Review (CDR) – November 15, 2005
- ACOP Phase II Safety Review – December 13, 2005
- AMS-02 Phase II Safety Review – Date TBD (Schedule under review) – JSC

### Upcoming Tests:

- Interface Plate Static Test – Date TBD – Location TBD
- Lower Joint Static Test – Date TBD – Location TBD
- STA Sine Sweep Test – January 2006 – INFN, Terni, Italy
- STA Acoustic Test – April 2006 – ESTEC, Noordwijk, Netherlands
- Full Assembly Modal & Static Tests – May 2006 – IABG, Munich, Germany

### USS-02 and GSE:

- The rivet guns to be used for assembly of the USS-02 were returned to the Bldg 10 Shop after being refurbished by the vendor.
- The rivet engineering evaluation test was completed. The test loosely simulated the "worst case" configuration of the USS-02 rivet joints. The plates were riveted together with a .063 inch gap between them. The rivets pulled the .25 inch plates together in the middle of the unsupported gap. The first test sample was riveted in the middle of the plates first. The first rivet installed did not pull the plates together, but subsequent rivets installed closed the gap. This situation left the head of the middle rivet in an unacceptable configuration with a gap between the rivet head and the plate. The second set of plates was riveted together starting at the outside holes near the supported end and working inward. The middle rivets were installed last. This riveting technique produced an acceptable rivet configuration.



- The USS-02 Assembly Build-Up and Fixturing drawing was released for fabrication.
- The USS-02 Alignment Template drawing was released through the Engineering Drawing Control Center (EDCC). Work was initiated on the machining of the template.
- The delivery of the insert installation and broaching tools from the supplier for the problematic inserts in the USS-02 piece parts was delayed. The supplier did not ship the parts when expected because they sold their stocked items before the ESCG purchase order was received. The tools are expected to be delivered to the shop by 7/19/2005.

#### Vacuum Case:

- Ultrasonic inspection was performed on six areas on the Second Article Weld that were identified to be cut out for tensile test samples.
- Work was initiated on the ultrasonic inspection of the closeout welds on the Structural Test Article (STA) Vacuum Case (VC).
- Efforts are continuing on the preparation of dispositions for a number of Discrepancy Reports (DRs) written against the Flight and STA VCs.
- Design concepts are being evaluated to stiffen the upper cover of the VC Shipping Fixture. As designed, the cover sags under its own weight. This means that there is a potential for rain water to pool on the cover if the VC is transported during inclement weather. If left uncorrected, there is a concern that the weight of the water could collapse the cover during shipping operations.
- A request was submitted for an additional design engineer to support the Vacuum Case and Certification Test activities. Scope of the work includes designing rib protectors for the VC Outer Cylinder and mass simulators for AMS-02 components to support the Modal and Static Tests.
- A design was created for a collar to restrict movement of the hand jack during installation of the VC into the Vacuum Case Test Fixture (VCTF). Drawings of the existing hardware were updated to incorporate the change.
- AMS-02, NASA and ESCG decals were applied to the Flight Vacuum Case Shipping Fixture.

#### Avionics:

- Work is continuing on responding to questions that were raised at the Uninterruptible Power Supply (UPS) Critical Design Review (CDR).

#### Structures:



- An updated Primary Support Stand (PSS) Finite Element Model (FEM) was updated to the current geometry. This model will be used for determining both the transportation stresses of the flight hardware and the PSS itself.
- The Vacuum Case Test Fixture (VCTF) FEM was updated to the latest design to perform the transient analysis for the Vacuum Case and cold mass Sine Sweep Test. The same FEM model will be used to finalize the static analysis for the VCTF itself.
- The first section of the Stress Report dealing with the updated bolt analysis was submitted to the checker for approval. This will standardize how the joint bolt analyses will be performed for all of the USS-02 bolted interfaces.
- Work is continuing on updating the Loads FEM to the current geometry for all of the AMS-02 components. Updates are currently being made to the ECAL and radiator models to match the current mass and geometry of these components.